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# REPEATED SPRINT AND CHANGE-OF-DIRECTION ABILITIES IN SOCCER PLAYERS: EFFECTS OF AGE GROUP

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## ABSTRACT

Dellal, A and Wong, DP. Repeated sprint and change-of-direction abilities in soccer players: effects of age group. *J Strength Cond Res* 27(9): 2504–2508, 2013—The purpose of the present study was to compare the performance in repeated sprint ability (RSA) and repeated changes-of-direction (RCOD) among elite soccer players with different age categories. Forty-nine elite soccer players from the same club and from different age categories (Pro2:  $n = 8$ , U19:  $n = 18$ , U17:  $n = 13$ , and U15:  $n = 10$ ) participated in this study. Each player was tested in both a RSA straight-line sprints ( $10 \times 20$  m with active recovery) and a RCOD test including four  $100^\circ$  COD at every 4 m ( $10 \times 20$  m with active recovery). The average time (AT), fastest time (FT), total time (TT), percentage of decrement score (%Dec), and RSA/RCOD index were recorded and calculated during all the RSA and RCOD tests. Results showed significant age group effects on RSA and RCOD parameters ( $p < 0.01$ ) and RSA/RCOD index parameters ( $p < 0.01$ ). Compared with other groups, U15 has significant ( $p < 0.05$ ) higher values in RSA-AT, RSA-FT, RSA-TT, RCOD-AT, RCOD-FT, RCOD-TT, index-AT, index-FT, and index-TT. However, the trend of performance time and RSA/RCOD index was always similar (i.e.,  $U15 > U17 > U19 > Pro2$ ;  $Pro2 > U19 > U17 > U15$ ) showing an age dependant for RSA and RCOD performance. The %Dec in RSA of U15 and U17 was significantly ( $p < 0.05$ ) higher than U19 and Pro2, whereas the %Dec in RCOD of U15 was significantly ( $p < 0.05$ ) higher than U19. In conclusion, the present study showed that the RSA and RCOD are age dependent, and therefore, coaches should plan a specific

program differentiating the RSA and RCOD, while the individualized training could begin in U17.

**KEY WORDS** football, youth development, agility, intermittent exercises, fitness testing

## INTRODUCTION

Repeated sprint ability (RSA) and repeated change-of-direction (RCOD) are regarded by coaches and researchers as important fitness components for, and predictors of, superior performance in many intermittent and team sports (1,3,5,11,12,18,30–32,34,35). It was found that RSA and RCOD are separate fitness components (shared variance  $\leq 50\%$ ) that required specific training (28,34). RSA is an important fitness component and it has been found that RSA was positively related to running distance covered in top level soccer match (22). In addition, higher skilled soccer players had better RSA performance compared with the less skilled (9,18,24).

There are approximately 1300 changes in direction to be undertaken in off-the-ball conditions during soccer match (2,33). The ability to perform sudden COD is considered as a logically valid criterion for fitness detection in soccer players of different age, competitive level, and gender (10,14,23,25–27,29,33). The premises that support the logical relevance of COD ability in soccer come from the observation of only a limited amount of match time spent by players with ball possession (18,24,33). Furthermore, Haj-Sassi et al. (15) combined time-motion analyses in a number of field and court sports and suggested that players performed many intermittent forward, backward, and lateral high-speed movements during games. Therefore, RCOD is considered as an important fitness component for team sports such as soccer.

Most previous studies concerning RSA and RCOD have reported only absolute values. Although such values were informative, comparison between RSA and RCOD were difficult. It was also difficult to tell whether one needed RSA or RCOD training more by looking at absolute values per se. Only one recent study (34) reported the relative value

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